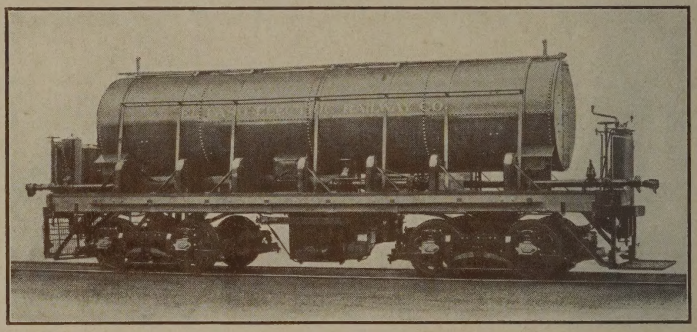
vol. IV APRIL, 1910 No. 4

BRILL MAGAZINE

Temple of the Savior
Moscow, Russia.



Brill Centrifugal Sprinkling Car

A little investigation will show you that it costs your municipality at least 60 cents per mile sprinkling by the horse and cart method now in vogue. With a Brill Centrifugal Sprinkler electric railways have given the same service, with less disturbance to traffic at a cost of 26 cents per mile including current consumption, employees' wages, interest on investment and depreciation. If you secured a contract at 40 cents per mile for 100 miles of street to be sprinkled twice a day for 6 months your net profit would be over $5,000 a year, to say nothing of reduced wear and tear on your rolling stock and the increased comfort of your patrons.

THE J. G. BRILL COMPANY
PHILADELPHIA - - - PENNSYLVANIA

John J. Staulry

BRILL MAGAZINE

Vol. IV APRIL, 1910 No. 4

JOHN J. STANLEY

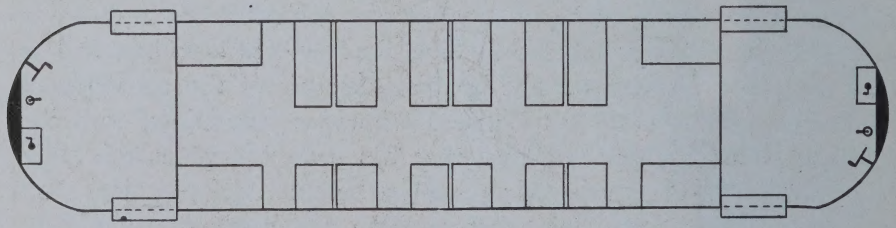
[WITH PORTRAIT INSERT]

JOHN J. STANLEY, the newly elected president of the Cleveland Railway Company was born in Cleveland in 1863 and received his education in that city. His father, Joseph Stanley, was the principal owner of the Broadway & Newburgh Railway Company, originally a horse car line. Just previous to the time the line was electrified Mr. Stanley took a position under his father and in 1878 was made superintendent. In 1892 there was a consolidation of the Broadway & Newburgh and the East Cleveland Railway companies under the name of the Cleveland Electric Railway and a year later the Brooklyn & South Side Railway was absorbed and at that time Mr. Stanley became general manager of the consolidated properties. In 1903 the consolidated properties were joined with the Cleveland City Railway, making what has been known as the "Big Consolidated", of which Mr. Stanley became vice-president and general manager. He held that position and made the Cleveland Electric Railway known throughout the country as one of the best operated electric railway properties in the United States, until April, 1908, when it was taken over by the Municipal Traction Company following a political upheaval. After six months under the new management a receiver was appointed, who served for sixteen months. At the end of that time a new franchise was granted to the Cleveland Railway Company, which took over the property on March 1, 1910, Mr. Stanley again becoming vice-president and general manager. Mr. Stanley is also interested with the Andrews-Vanderbilt Syndicate in the street railway and interurban properties at Utica, Herkimer, Oneida, Schenectady and Rochester, N. Y., known as the New York State Railways, of which he was until recently vice-president, a position which he resigned to devote his entire attention to the reorganization of the Cleveland property.

CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE

MOSCOW, RUSSIA*

THERE are two tramway systems in Moscow. The Municipal Electric Tramways have about 50 miles of double track line and the Belgian Tramway Company have 26 miles of horse tramway. In addition there is a short section of municipally operated horse tramway and the Belgian Company has a short steam line which connects with an electric railway which it owns. A project is on foot for the electrification of the horse lines under municipal ownership and for the extension of the existing electric lines.



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—The Seating Arrangement of the Moscow Trail and Motor Cars is Like That Shown Above and is Necessary Owing to Restricted Width Which is Seven Feet

For this purpose the municipality proposes to borrow 9,000,000 roubles (about $4,750,000). It is expected that the work will also result in the electrification of the lines of the Belgian Company.

Under the existing organization, there is a wide variety in the rolling stock which is used, but in view of the predominance of the mileage of municipal electric tramways and the consequent predominance numerically of the electrically operated cars, the standard electric cars of the municipal tramways may safely be considered the present

* This is the sixteenth of a series of articles, commencing in the January 1909 number of Brill Magazine, which describe in a general way the type of car in many of the larger cities of the world, with information indicating the conditions which have been the influencing factors in the adoption of the several types. The cities considered in previous articles have been in order of the appearance of the articles: Philadelphia, New York, Detroit, Chicago, Baltimore, London, Washington, New Orleans, Boston, Denver, Atlanta, Portland, (Ore.) Norfolk, Lisbon, Portugal and Milan, Italy.

standard of Moscow. While the various types are all of considerable interest no attempt will be made in this article to show the influence which they have had on the present standard car of the electric rail-

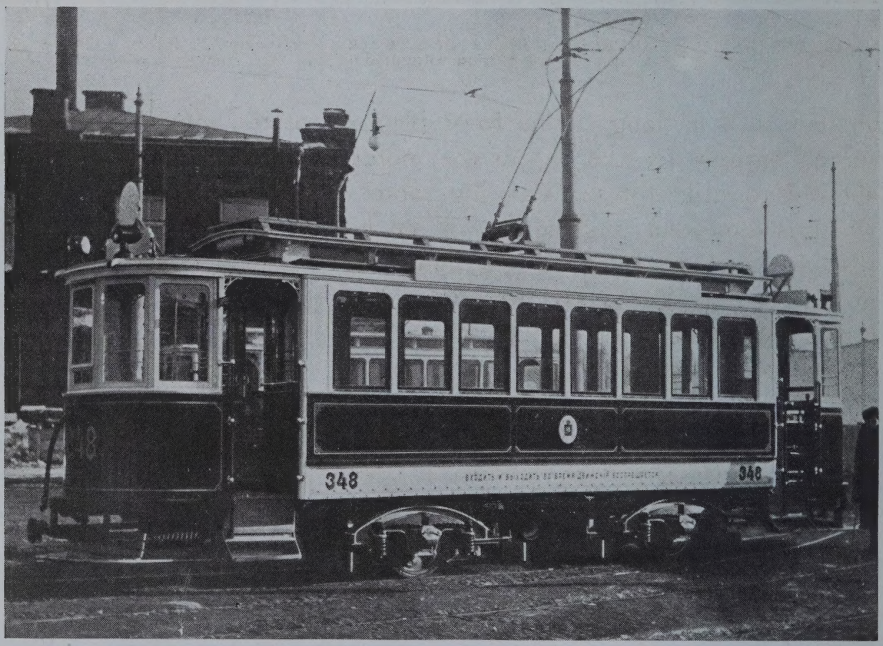
CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—The Total Mileage of the Various Tramway Systems in Moscow is 76 Miles of Double Track—The Complete Electrification of the Municipal Tramways at an Early Date is Probable

ways or to describe cars other than those used in electric service. There are two types of standard cars, a motor car and a trail car, both of practically the same dimensions. The following are the principal

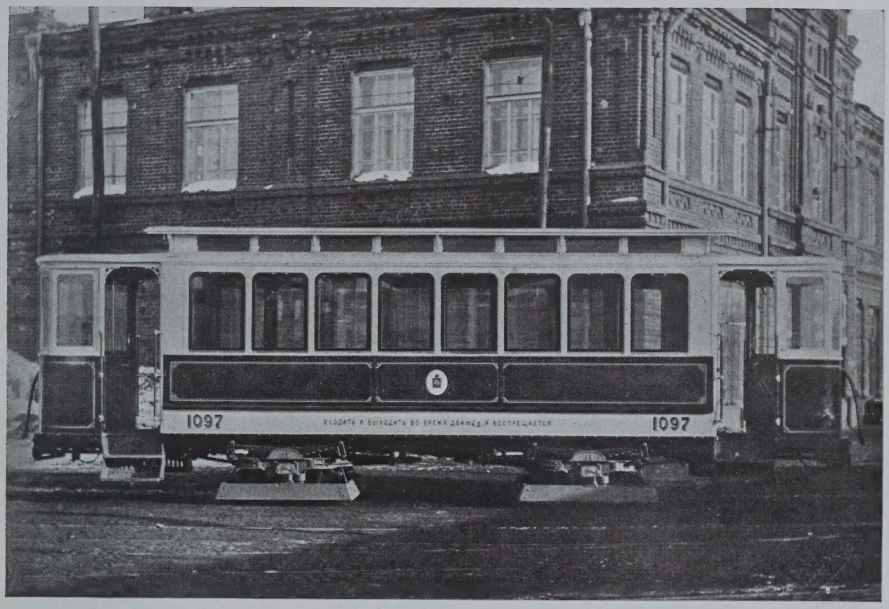
dimensions of the motor car and figures for the weight of car body and equipment:

Length over bumpers	34 ft. 1 in.
Length over end panels	21 ft. 8 in.
Extreme width	7 ft. 1 in.
Height top of rail to top of trolley board	11 ft. 2 in.
Diameter of wheels	33½ in.
Journal dimensions	3½ in. x 7 in.
Weight:	
Carbody and apparatus	20,500 lb.
Trucks and motors (2)	8,500 lb.
Total	29,000 lb.

The trail car bodies weigh 18,500 lb. each and are mounted on one-axle trucks of German manufacture as are the motor cars, which have two 50 h. p. motors per car. Both motor and trail cars are of the double-end type and have three-quarter vestibuled platforms which are



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—Standard Motor Car of Moscow, Russia—Length Over Bumpers 34 ft.—The Total Weight With Two-Motor Equipment is 29,000 lb.



CONDITIONS WHICH GOVERN THE TYPE OF CAR FOR CITY SERVICE—Standard Trail Car of the Moscow Tramways, Electric Section—Mounted on One Axle Trucks

about 6 ft. 6 in. long. The front platform of the motor cars is reserved entirely for the use of the motorman and passengers are not allowed to utilize it for standing room. The seating arrangement, which is somewhat unusual, as will be noted from the accompanying plan, is largely the result of the comparative narrowness (7 ft. 1 in.) of the car body, but seats are provided for 26 persons and 9 passengers are allowed to stand on the rear platform.

All of the standard cars are the product of Russian car builders, four manufacturers having built 331 motor cars of the type shown in the engravings. The underframe of these cars is of steel construction, the side frames being channels $4\frac{3}{4}$ in. deep and reinforced with steel plates $13\frac{3}{8}$ in. deep by $\frac{3}{16}$ in. thick. There are two center and two intermediate sills which are $2\frac{1}{4}$ by $1\frac{3}{16}$ tees.

There are 150 trail cars of the type shown in the engraving, the majority of which are the product of Russian car works. These cars have the same seating arrangement as the standard motor cars. There are also 66 trail cars with longitudinal seats and seating capacity for 30

persons, but the cars with seating arrangement corresponding to that shown on a preceeding page has met with greater favor.

The guage of the Moscow tramways is 5 ft. and the radius of the sharpest curve is 50 ft. There are a few grades 100 to 300 feet long which range from 5 to 8 per cent.

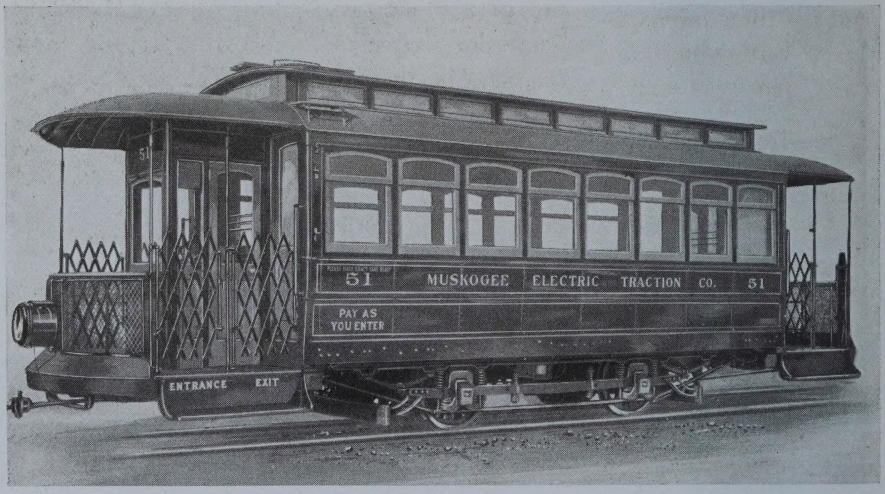
The number of passengers carried in the year 1908 was 94,841,024.

For the facts embodied in the above article, we are indebted to M. Sheremetewsky, 25 Old Basamanow Street, Moscow.

ONE MAN PAY-AS-YOU-ENTER-CARS

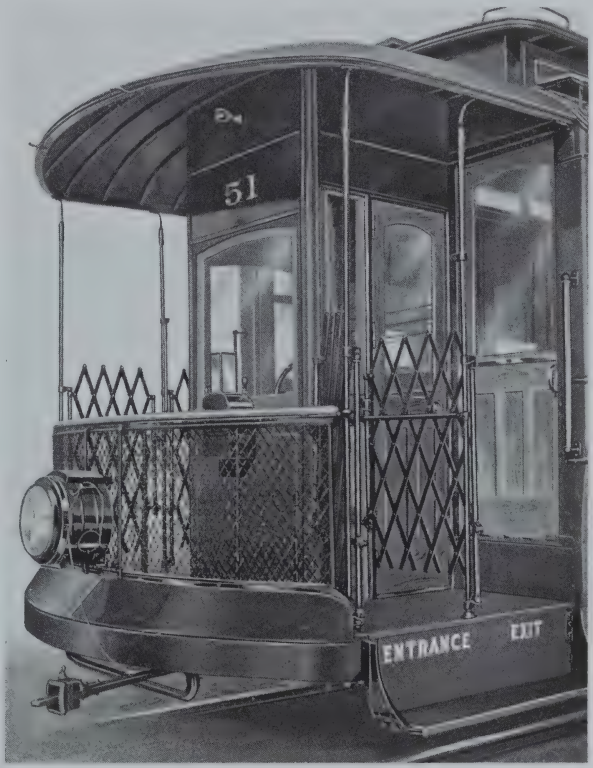
EQUIPMENT FOR OKLAHOMA

SIX Pay-As-You-Enter cars for one-man operation were recently delivered by the Danville Car Company for the rapidly growing city of Muskogee, Oklahoma. The cars have standard Pay-As-You-Enter non-vestibuled platforms at both ends with folding gates at the steps on both sides. The rear platform gates are



ONE-MAN PAY-AS-YOU-ENTER CARS—There is A Square Motorman's Cab On the Platform—Passengers Entering the Car Pass In Front of It and Drop Their Fares In A Fare Box

closed and locked and passengers enter and leave by the front platform. In this respect the cars follow the scheme of operating the one-man Pay-As-You-Enter cars for Brunswick, Ga., which were described in Brill's Magazine for December, 1909. An unusual feature appears in the use of motorman's cabs about three feet square which are located against the bulkheads between the entrance and exit doors and which take the place of vestibules, Each cab has a folding side-entrance door and a single drop sash at the front. Passengers boarding the cars must pass the motorman and as they do so drop their fares in a fare box which is hung from the window of the motorman's cab. The type of fare box which is used for the Muskogee cars is Brill No. 4A which is equally suitable for either tickets and coins or for both.



One-Man Pay-As-You-Enter Cars—The Platform At Both Ends of the Cars Are Alike—The Use of the Rear Platform is Prohibited by the Folding Gates Which Are Arranged to Lock

To prevent passengers boarding at the rear of the car the steps on both sides are protected by folding gates, as stated above, which are fitted with locks. To prevent confusion by passengers attempting to leave the car at the rear, a folding seat is provided which may be placed in position against the bulkhead and extending across both doorways. This feature is shown in one of the accompanying engravings.

The cars have longitudinal seats and in general dimensions are standard 21-ft. closed single truck cars as follows:—

Length over end panels	21 ft.	0 in.
Length over platform crownpieces	32 ft.	0 in.
Length over each platform	5 ft.	6 in.
Length over bumpers	33 ft.	0 in.
Width at sill including panels	8 ft.	$6\frac{1}{2}$ in.
Truck wheel base	8 ft.	0 in.
Track gauge	4 ft.	$8\frac{1}{2}$ in.
Wheel diameter		33 in.

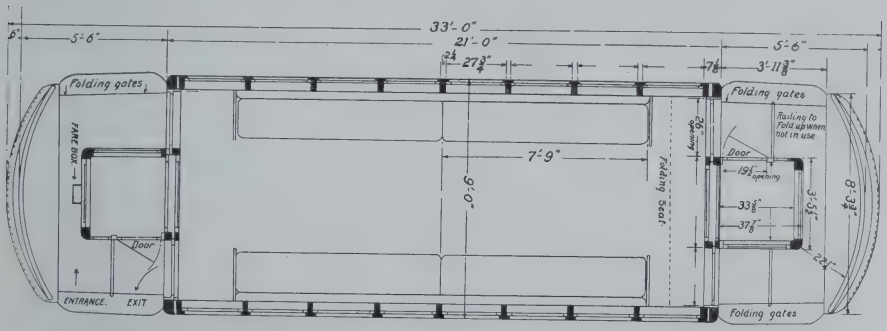
The trucks, which are the Brill No. 21-E type, have pipe trussrod supports at the ends to carry the extra weight due to the platforms of

One-Man Pay-As-You-Enter Cars—Interior Showing the Method of Preventing the Use of the Rear Platform and At the Same Time Increasing Seating Capacity

slightly increased length embodying the Pay-As-You-Enter arrangement.

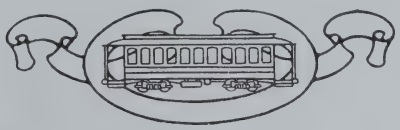
The interior finish is ash with birds-eye maple veneer ceilings. The seats are upholstered in cane. Push buttons are provided on each side

post and the cars are equipped with electric heaters, eight per car. The windows are of the usual drop sash variety in two sections, the upper one of which is fixed. Pantasote curtains are used. Both the entrance and exit doors slide towards the center of the car, the pocket in the bulkhead back of the motorman's cab being deep enough to



One-Man Pay-As-You-Enter Cars—All Passengers Board and Alight At the Front of the Car—A Portable Folding Seat Across the Rear Bulkhead Prevents the Use of the Rear Platform

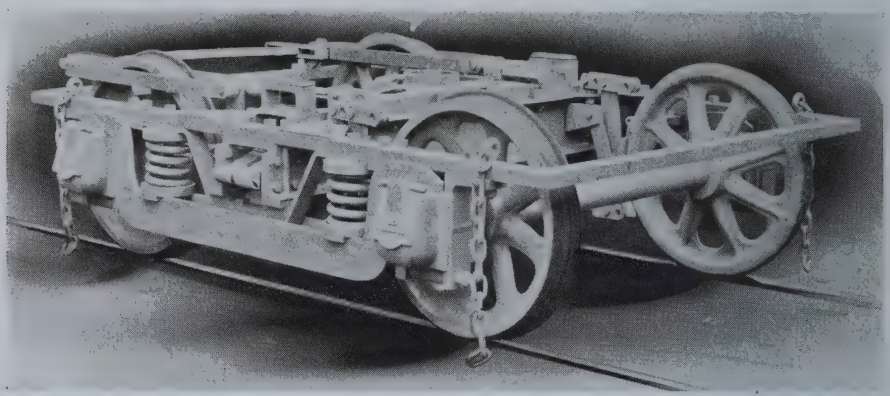
permit both doors to be pushed into the pocket without interference. The arrangement of these doors and of the platform gates, folding seat and the platform railing, which is a more or less necessary feature of the Pay-As-You-Enter arrangement on all cars of the type, is indicated clearly by the accompanying plan.



TRUCK BRAKE RIGGING ACCESSIBILITY

SOMETHING MORE ABOUT THE No. 27-M. C. B. TRUCK

THERE is no part of any truck which requires more careful maintenance than the brake rigging. Aside from the wheels and axles the brake rigging is more constantly in use than any other part of the truck and in view of this fact and the violent action which it receives when used, it is not surprising that repairs and adjustments are a frequent necessity. While the claim is made that the brake rigging of the Brill No. 27-M. C. B. truck is



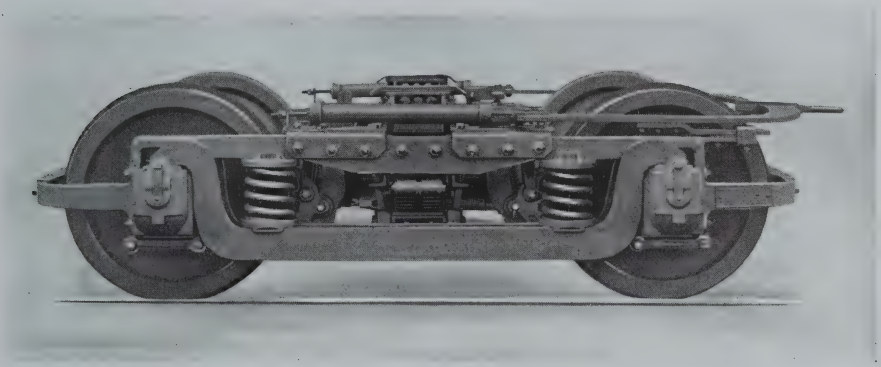
BRAKE RIGGING ACCESSIBILITY—The Usual Type of M. C. B. Truck—The Truss Under the Top Chord of the Side Frame and the Extensions of the Transoms Occupy the Space Between Equalizer Springs and Preclude Brake Repairs from the Side

simpler in design than that of any other truck of the M. C. B. type and accordingly that it is easier to repair and maintain, it is not claimed that it is any less subject to the ordinary effects of wear and tear than any other brake rigging of first class manufacture.

But in considering the circumstances of brake rigging maintenance requirements it may be worth while to examine the engravings on the accompanying pages and note the comparative accessibility of the brake rigging of the Brill No. 27-M. C. B. and the brake rigging of other types of M. C. B. trucks. In the ordinary design of M. C. B. truck

the space between the equalizing springs is almost entirely filled by the center truss for supporting the top member of the side frame, by the extensions of the transoms or by the castings which are sometimes used under the center truss. What little space there is between the equalizing springs is so broken up by the position of the parts referred to, that the brake rigging is practically inaccessible from the side and the truck must in nearly every case be brought over a repair pit when repairs of any extent are necessary.

The Brill No. 27-M. C. B. truck on the other hand by reason of the design and the use of solid forged side frames has a large open space between the equalizing springs, and the brake shoes, brake hangers, brake rods and other parts are readily reached with whatever tools may



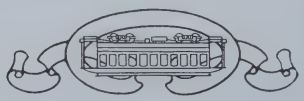
BRAKE RIGGING ACCESSIBILITY—The Brill No. 27-M. C. B. Truck—The Ample Working Space Between the Equalizer Springs Makes it Possible to Renew or Adjust Brake Parts Without Placing the Truck Over A Repair Pit

be necessary. The large amount of working room for repair purposes is clearly shown in the engraving. The other parts of the brake rigging are equally accessible. The construction it may be noted secures a material saving in weight.

The No. 27-M. C. B. truck has met with remarkable favor. In the period of 40 days from October 1 to December 10, 1909 orders were received from five roads for 82 No. 27-M. C. B. trucks of various sizes as reported in the December number of Brill Magazine. Since that date and prior to April 1, or in a period of slightly over three months, orders totaling 245 trucks have been received. Inasmuch as the truck has been on the market scarcely six months it bids fair to surpass the remarkable record of the No. 39-E for volume of sales.

The following is the list of orders received between December 10 and April 1:—

Northern Ohio Traction & Light Company	12	No. 27-M. C. B. 2
Central Kentucky Traction Company	4	No. 27-M. C. B. 3
Benton Harbor & St. Joseph Ry. & Lt. Co.	4	No. 27-M. C. B. 2
Allegheny Foundry Company	1	No. 27-M. C. B. 2
Central California Traction Co.	16	No. 27-M. C. B. 2
Grand Junction & Grand River Valley Ry.	8	No. 27-M. C. B. 2
Public Service Railway	190	No. 27-M. C. B. 1
Martinez & Contra Costra County Ry.	6	No. 27-M. C. B. 1
Evansville & Southern Indiana Traction Co.	2	No. 27-M. C. B. 1
Norfolk & Southern Railway	2	No. 27-M. C. B. 2
Total	245	

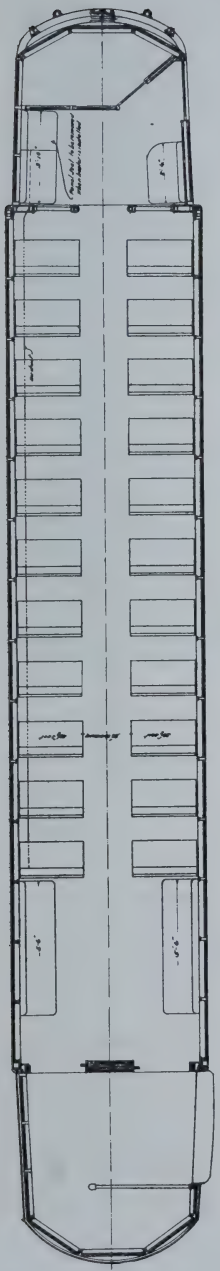


LARGE CITY CARS FOR CLEVELAND

PAY-ENTER TYPE

CLEVELAND has the longest cars in regular operation in any city of the United States. Twenty-five cars recently delivered to the Cleveland Railway Company by the G. C. Kuhlman Car Company are 52 ft. over buffers. The exceptionally long platforms which are used limit the length of the car body to 36 ft. which, however, is very long for a city car and gives

LARGE CITY CARS FOR CLEVELAND—The Car Shown, Which is One of An Order of Twenty-five Built by the G. C. Kuhlman Car Company, is 52 ft. Long Over Bumpers—The Seating Capacity is 54 Persons



Large City Cars for Cleveland—In Addition to the Large Seating Capacity There is Ample Standing Room and the Carrying Capacity is Almost Unlimited—The Front Exit is Controlled by the Motorman.

a seating capacity of 54 passengers. The cars were ordered several months ago when the property was in the hands of receivers and was operated as the Municipal Traction Company. During that time the first prepayment cars were placed in operation and the name "Pay-Enter" was applied to them and now by usage and by the terms of an ordinance by which the Cleveland Railway Company has regained control of the city properties in Cleveland, the term "pay-enter" is used in that city to cover any "car provided with a fare box and so arranged as to effectively provide for the prepayment of fares by passengers." Thus the term "pay-enter" covers both the cars described in the article which have the standard Pay-As-You-Enter arrangement and other types of prepayment cars, some of which have been created by rebuilding old equipment.

The twenty-five cars which have recently been delivered by the G. C. Kuhlman Car Company are the single-end type and are mounted on Brill No. 27-G1 trucks. The rear platform, which is 7 ft. 11½ in. long is vestibuled except at the steps and has a large section available for smokers use as shown in the accompanying floor plan. The front platform, which is 7 ft. 2½ in. long is fully vestibuled and is separated from the car body only by a pipe railing and pipe stanchions which are used in lieu of the usual bulkhead. Provision is also made on the front platform for short longitudinal seats for passengers. One of these seats is removable so that a heater can be installed. A motorman's compartment of ample size with sliding door is provided on the front platform.

The following is a tabular statement of the principal dimensions of the cars:

Length over buffers	52 ft.	0	in.
Length over front vestibule	7 ft.	2½	in.
Length over rear vestibule	7 ft.	11½	in.
Length over corner posts	36 ft.	0	in.
Width over fender rail (widest part)	8 ft.	6	in.
Width over posts	8 ft.	2	in.
Width over sills	8 ft.	1	in.
Height bottom of sill over roof	8 ft.	6	in.
Bolster centers	24 ft.	0	in.

The unusual width over posts makes it possible to use seats 38½-in. long and still have an aisle 23-in. wide. The seats are upholstered in rattan and the interior finish of the cars is cherry which was treated as follows:

1. Prime with coat of boiled linseed oil
2. Coat of cornstarch filler
3. Coat of rubbing varnish
4. Rub with pulverized pumice and felt
5. Coat of rubbing varnish
6. Rub with pulverized pumice and felt
7. Coat of rubbing varnish
8. Rub with pulverized pumice oil and felt sufficient to take off gloss.

Thus it will be seen that all interior woodwork received three coats of varnish which were rubbed to a dull finish. All outside woodwork such as sash and doors which were exposed in addition had a coat of finishing varnish.

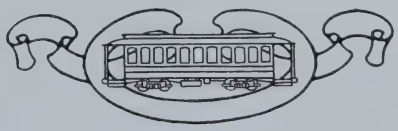
One of the features of the cars is the method of heating which is by forced circulation of hot air. Mention has already been made of the provision for a heater on the front platform. This heater is provided with a motor driven fan which draws air through an opening in the car floor, forces the air in contact with the stove and expels it through a duct extending along the side of the car.

Owing to the length of the cars it is interesting to note that the bottom framing provides for continuous one-piece side sills of yellow pine without plate reinforcing. The end sills, needle beams and diagonals are white oak, the end sills being reinforced with steel plates. The framing is braced diagonally and transversely and all corners are gussetted. The platforms are supported by outside knees of girder construction composed of sheet steel flanked by angles. The center

LARGE CITY CARS FOR CLEVELAND—Interior View Showing the Pipe Rail and Stanchions Which Takes the Place of A Front Bulkhead—The Forced Circulation Hot Air Heater Shown in the Foreground is Located on the Front Platform

knees are white oak reinforced with steel angles extending in a continuous piece from the body bolster.

Each car is equipped with four 40 h. p. motors and weighs complete with trucks and all equipment about 49,000 lb.

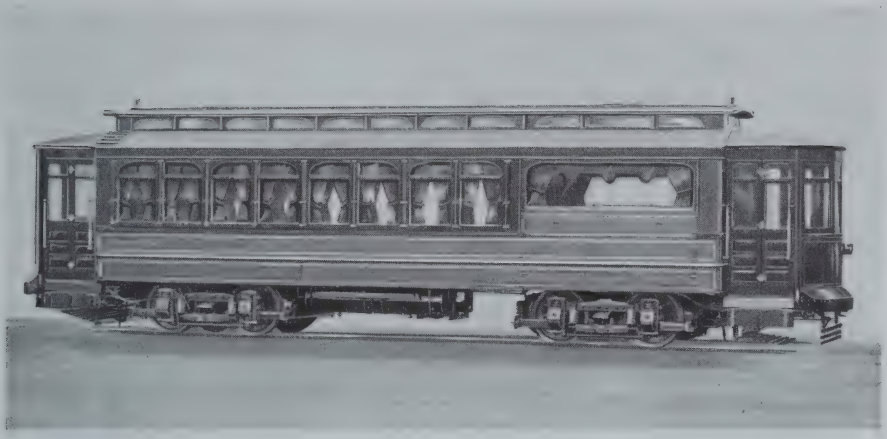


SPECIAL EQUIPMENT FOR THE CHICAGO CITY RAILWAY

FUNERAL CARS

THE use of funeral cars on the electric railways of Chicago has reached the stage where the Chicago City Railway Company has found it advisable to add two more cars of that type to the equipment of the Calumet & South Chicago Railway. The new cars which were built by the G. C. Kuhlman Car Company are 43 ft. long over bumpers and have two compartments, one of which is for the casket and pallbearers and the other for the

SPECIAL EQUIPMENT FOR THE CHICAGO CITY RAILWAY—Interior of Pallbearers' Compartment—The Interior Finish of the Cars is Mahoganized Cherry



SPECIAL EQUIPMENT FOR THE CHICAGO CITY RAILWAY—Funeral Cars for the Calumet & South Chicago Lines—Mounted on Brill No. 27-F Trucks and Conforming in General Features to the Standard Equipment of the Chicago City Railway

passengers or mourners. In general outline the cars conform to the standard Chicago City Railway Car and they are of the double-end type. The passenger or mourner compartment occupies the space of four of the double windows which are a characteristic feature of the Chicago cars and the pallbearers' compartment has a single window with arch top on each side. It is this difference in the windows of a portion of the car that makes the principal difference in exterior appearance and outline as compared with the regular equipment.

The passenger or mourner compartment has 12 transverse seats and four stationary longitudinal seats and will seat 32 passengers. The

SPECIAL EQUIPMENT FOR THE CHICAGO CITY RAILWAY—Funeral Car With Casket Compartment Opened—The Inside of the Lowered Door and the Floor of the Compartment is Fitted With Rollers on Which the Casket is Placed

interior finish of this and the pallbearers compartment is mahoganized cherry. The seats are upholstered in Spanish leather. The usual curtains are employed and in addition to the side windows, inside end and partition windows are fitted with black drapery curtains with tastefully decorated lambrequins above.

One side of the pallbearers compartment has a longitudinal seat extending from the bulkhead to the partition; the other side has a

Special Equipment for the Chicago City Railway—Interior of the Passenger Compartment Which Seats 32 Persons—The Seats are Upholstered in Spanish Leather and Special Black Draperies Are Used At the Windows

casket compartment for holding the casket. The casket is placed in the compartment from the outside, a door being provided which opens downward and when open is supported horizontally by chains. The inside of the door and the floor of the compartment is fitted with rollers for the carriage on which the casket is placed. The casket compartment which is finished in white and gold is also accessible from the

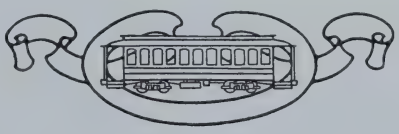
inside of the car by means of a removable panel. The space above the casket in the pallbearers compartment is available for flowers, a light sheet brass covering and an ornamental rail being provided.

The underframe of the car is steel, 10-in. channels being employed for the side sills and reinforced with 3 by 2½ by $\frac{5}{6}$-in. steel angles riveted with the 3-in. leg flush with the bottom of the channel, except the portion of the sill on the side of casket compartment. For the full length of the casket compartment door opening a 10-in. channel is used for the side sill reinforcing. The channel side sills which come directly below the window sash pockets have 3 by 1-in. slots cut between the posts for the escape of waste which collects in the sash pockets.

The following are the principal dimensions of the cars:

Length over bumpers	43 ft. 1 in.
Length over crownpieces	42 ft. 1 in.
Length over end panels	32 ft. 1 in.
Width over side sill angles	8 ft. 0½ in.
Width over guard rails	8 ft. 6 in.
Height top of rail to top of trolley board	11 ft. 10 in.

The cars are equipped with removable storm sash on all the side windows and are provided with wire screen sections for use in summer. Each car is heated with seven truss plank and four panel electric heaters in the passengers compartment and four panel heaters in the pallbearers compartment. The cars are lighted with frosted incandescent lights. Push buttons are provided on each window post, the draperies are readily removable and otherwise the cars could be adapted with little difficulty to other than funeral service.



STRAIGHT-SIDE CLOSED CARS FOR NEW ENGLAND

NEW EQUIPMENT FOR THE CONNECTICUT VALLEY STREET RAILWAY

THE Connecticut Valley Street Railway Company added to its equipment a few months ago some cars of the type shown in the accompanying engravings. The equipment, which was built by the Wason Manufacturing Company, has the following principal dimensions:

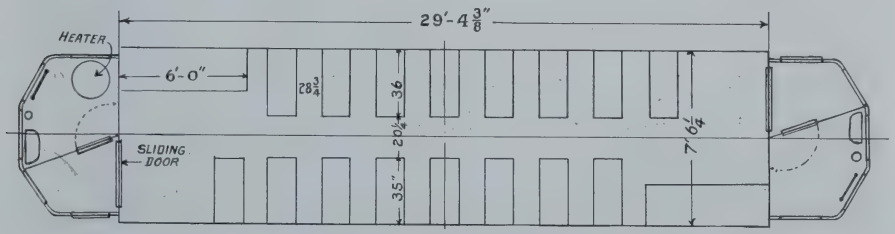
Length over corner posts	30 ft. 0 in.
Length over crown pieces	39 ft. 3¾ in.
Width over sills	8 ft. 3¼ in.
Height from under side of sill over trolley board	8 ft. 7¼ in.
Height inside from floor to ceiling	7 ft. 6⅞ in.

STRAIGHT-SIDE CLOSED CARS FOR NEW ENGLAND—The Cars Have Mahogany Interior Finish and Plush Upholstered Seats—The Bulkhead Entrance and Exit Doors Are At Diagonally Opposite Corners of the Car

STRAIGHT-SIDE CLOSED CARS FOR NEW ENGLAND—The Length Over All is 39 Feet—The Seating Capacity is 44 Persons—The Cars Were Built by the Wason Manufacturing Company

The cars are an excellent example of the straight side full vestibuled car with steam coach roof. They are the double-end type and have drop platforms which are 4 ft. $7\frac{3}{4}$-in. long.

The seating arrangement and the platform arrangement, which are in this case closely related, are both somewhat unusual. The seating arrangement is necessarily altered from the usual standard arrangement with short longitudiual seats at the ends in order to provide for an easy access bulkhead doors. The position of the bulkhead doors at one side provides room for a diagonal platform partition extending from the center line of the car body at the bulkhead to the front of the vestibule and forming a motorman's cab. There is a folding exit door in the cab partition and at one end a hot water heater is installed in a corner of the motorman's cab.



STRAIGHT-SIDE CLOSED CARS FOR NEW ENGLAND—The Location of the Bulkhead Doors is In Accordance With the Easy Access Arrangement

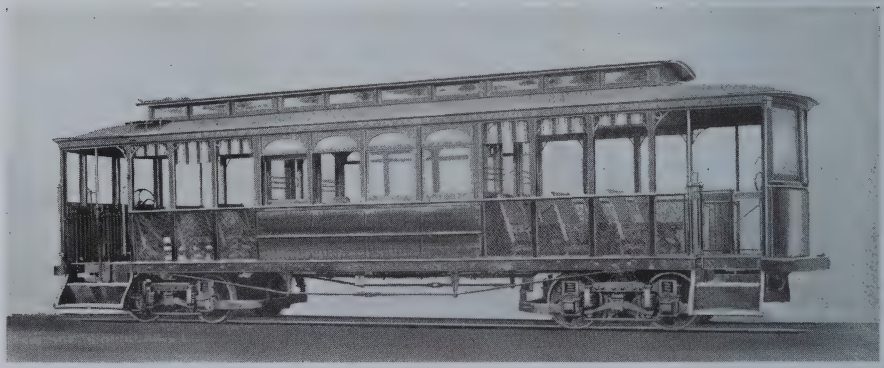
The interior of the cars is finished in mahogany, and reversible seats, upholstered in plush are used. There are 16 of these which, with the diagonally opposite 6-ft. longitudinal seats, give each car a seating capacity of 40 persons.

The cars have steel underframes of which the principal members are 6-in. Z-bar side sills and 12-in. channel center sills. The end sills are also 6-in. Z-bars.

CARS FOR THE FRESNO TRACTION COMPANY

CALIFORNIA COMBINATION TYPE

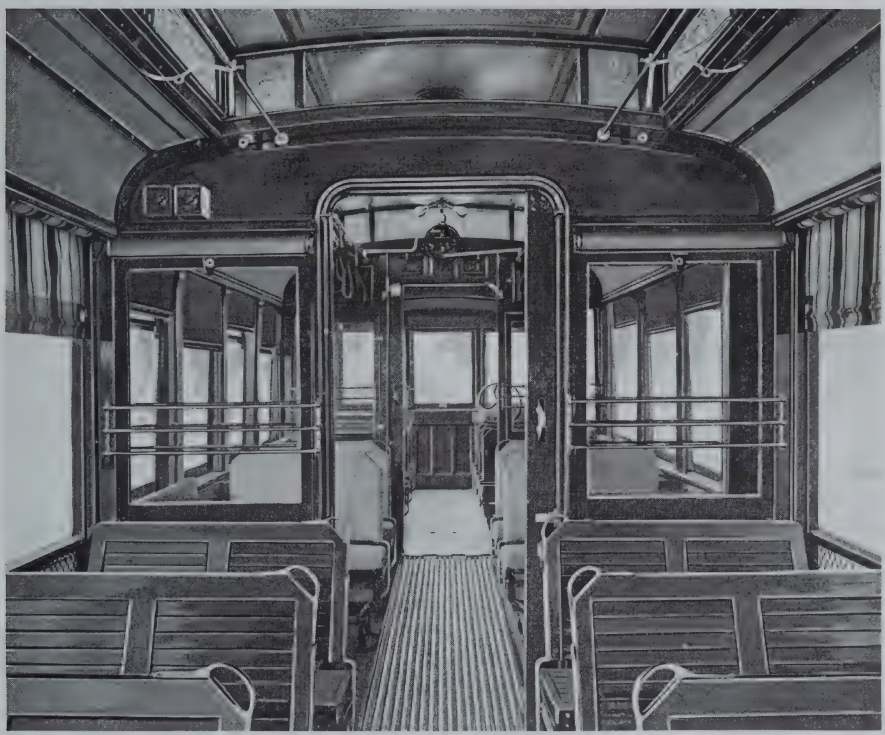
SOUTHERN CALIFORNIA'S climate is so mild throughout the year that at certain hours almost every day an open car is desired by passengers; but a closed car is almost an equal necessity after sundown. It is these conditions which have resulted in the development of a combination open and closed car which is in general use in California to the exclusion of most other parts of the country and which has accordingly become to be known



CARS FOR THE FRESNO TRACTION COMPANY—Ten Cars of the Above Type Mounted on Brill No. 27-GE1 Trucks Have Recently Been Delivered by the American Car Company

as a California type car. Ten cars of this type were included in a recent shipment of the American Car Company to the Fresno Traction Company.

The cars in question are 36 ft. long over all and have a center closed section which is 11 ft. 4 in. long. The entire floor of the car,



Cars for the Fresno Traction Company—The Center Closed Section Will Seat 16 Passengers and the Two Open Sections At the Ends 12 Passengers Each—The Interior Finish is Mahogany

including platforms is at the same level and there are three steps placed next to the closed section leading from the car to the ground. The construction permits the use of continuous I-beam center sills 4-in. deep (10.5 lb.) and extending from bumper to bumper. There are also 5-in. (14.75 lb.) I-beam intermediate sills extending from bumper to bumper. The side sills are in three parts, one extending the length of the closed section and the other two extending from the steps. These sills are long leaf Southern pine 4½ by 5-in. plated on the outside with

a 5 by $\frac{5}{8}$-in. steel plate extending the entire length of the car and bent to provide for the step recess. The crossings are white oak and are fitted with truss rods.

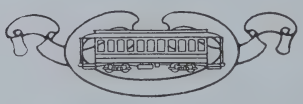
The closed section of the car has eight transverse seats which are upholstered in rattan. The windows are of the usual drop sash variety, two sash being employed between each post, and the upper one being fixed and the lower one arranged to drop into a wall pocket. The interior finish of the closed section is mahogany. Sliding doors 30-in. wide are provided in the bulkhead.

The open sections of the car have wood slat seats. The ends of the car are vestibuled, mahogany sash being employed, and the inside of the vestibule hood has mahogany finish. Diamond mesh wire screens with $\frac{3}{4}$ in. channel frames are used between posts and are shaped concave to provide for the sweep of the posts.

The cars are mounted on Brill No. 27-GE1 trucks and have the following dimensions:

Length over all	36 ft.	0	in.
Length over dashers	34 ft.	6	in.
Length of closed section	11 ft.	4	in.
Width over lower step (extreme)	9 ft.	2	in.
Width over posts at belt rail	8 ft.	2	in.
Height of each step		12½	in.

The cars weigh 26,400 lb. each complete with trucks, and without motors. The trucks weighed 5600 lb. each, or a total of 11,200 lb. and the carbody 11,200.



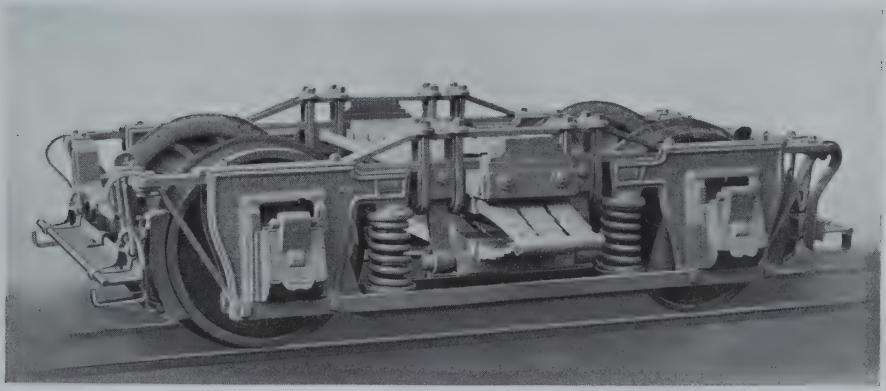
MORE WASON EQUIPMENT FOR THE GUATEMALA RAILROAD

OBSERVATION CARS

IN addition to the equipment for the Guatemala Railroad which was described in Brill Magazine for February, the Wason Manufacturing Company has shipped to the road during the past month three observation cars and a business car for the use of the general manager. The dimensions of the equipment are as follows:

	Business car	Observation car
Length over platform end sills	39 ft. 6 in.	38 ft. 0 in.
Length of body over corner posts	37 ft. 2 in.	32 ft. 0 in.
Length of observation platform	9 ft. 8 in.	7 ft. 2 in.
Width over side sills	8 ft. 0½ in.	8 ft. 0½ in.

The underframing of both types of equipment corresponds to that of the equipment described in the February number of Brill Magazine, namely: two 7-in. channel side sills, two 7-in. I-beam center sills and two 6-in. I-beam intermediate sills, end sills reinforced with 6-in. I-beams and cross timbers of oak. The body bolsters are of wrought plates 8 by ⅞ in. and 8 by 1 in.



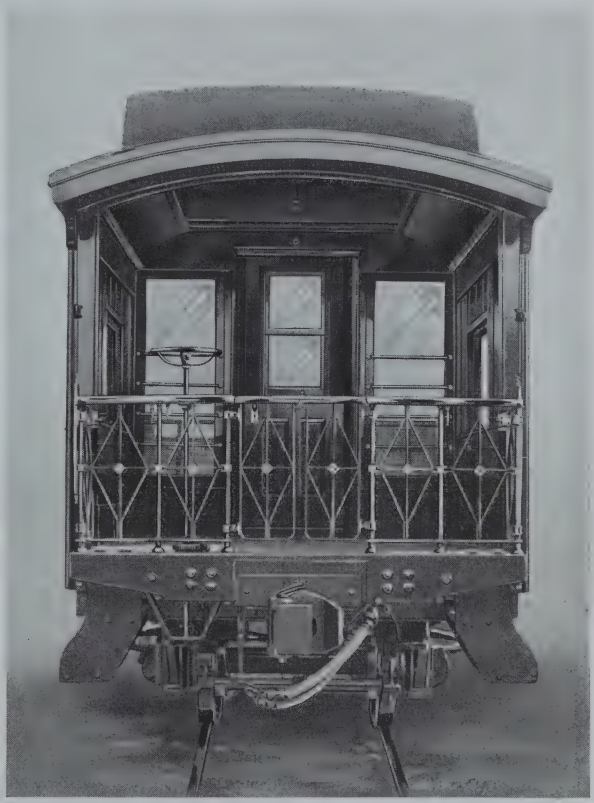
MORE WASON EQUIPMENT FOR THE GUATEMALA RAILROAD—The Trucks are of All-Steel Construction The Side Bearings are Outside the Truck Frames Owing to the 3-foot Track Gauge

More Wason Equipment for the Guatemala Railroad—One of Three Chair Cars With Observation Platform—The Length Over Platforms is Thirty-eight Feet

The cars are mounted on all-steel trucks built by the Wason Manufacturing Company and shown in an accompanying illustration. The trucks have steel pedestal castings which are tied together by a

More Wason Equipment for the Guatemala Railroad—Interior of Observation Chair Car Looking Toward the Observation Platform—Each Car Has 24 Chairs—The Interior Finish is Mahogany

continuous forged upper chord and a one-piece tie bar. The upper chord has a truss which is carried above instead of below the bolster and from this truss and the top chord, the bolster spring seat is supported. The bolster ends extend beyond the truck frame sufficiently to allow outside side bearings, the car bodies being 8 feet wide over sills and the track gauge only 3 ft. Triple elliptic bolster springs are used. The truck wheel base is 5 ft. and the wheels are 26-in. in diameter and steel-tired. The brake rigging, which is outside hung, includes all-metal brake-beams.



More Wason Equipment for the Guatemala Railroad—The Platform Railing is Iron With Brass Capping—The Floor is Covered With Linoleum

The interior of the observation cars is finished in mahogany and has 24 wicker chairs. At the end of the car without observation platform there is a lavatory with a door opening from a passageway at one side of the car. Against the lavatory bulkhead in the main compartment of the car there is a leather covered lounge with leather covered pillow and head roll. The floor of the main compartment is suitably carpeted and a curtain of corresponding color is supported across the passageway to the lavatory. There is the usual equipment of water cooler, lamps, etc., and there is also a small buffet equipment with ice chest and cupboards. Four small mahogany tables are provided

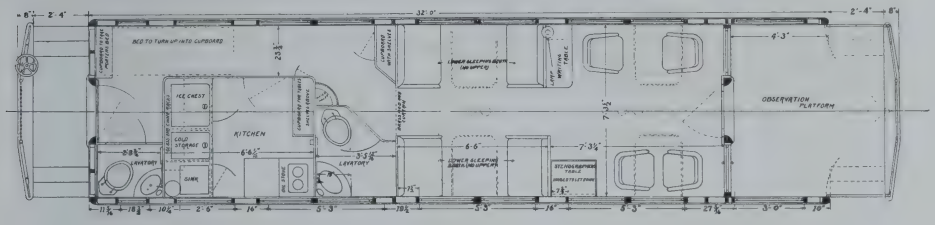
More Wason Equipment for the Guatemala Railroad—Interior of General Manager's Business Car—The Stationary Seats Make Up Into Lower Berths

which are arranged to hook into the side of the car at convenient distances. The observation platform has an iron railing with brass

More Wason Equipment for the Guatemala Railroad—Thirty-nine Foot Business Car With Observation Platform at One End

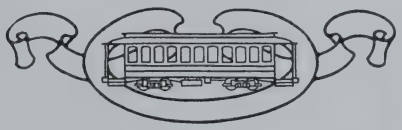
capping. The platform floor is covered with linoleum and is provided with trap doors over the steps.

The business car has an extra large observation platform and a compartment at the end with chairs and of the same general type as the observation cars. The car also has four fixed seats which are



More Wason Equipment for the Guatemala Railroad—Plan of Business Car

arranged to make up as lower berths, a lavatory, a well arranged and fairly large kitchen, and a folding cot berth and a lavatory for the porter. In the compartment with movable chair seats there is a writing table and a stenographer's table, the latter hinged to let down. The car has many conveniences, such as electric bells, thermometer, speed recorder, etc., and is finished in inlaid mahogany. The kitchen has a thoroughly insulated ice chest, copper-lined sink, cupboards for glass ware and china, table rack, shelves and oil stove.



BRILL MAGAZINE

Published on the fifteenth of each month by the

PUBLICITY DEPARTMENT OF THE J. G. BRILL COMPANY

In the interests of The J. G. Brill Company, American Car Company, John Stephenson Company, G. C. Kuhlman Car Company, Wason Manufacturing Company, Danville Car Company, Compagnie J. G. Brill.

FUNERAL CARS of the type described on another page are only one of the many types of special equipment which electric railways can use as income producers. Other types such as ash and coal cars offer a means of reducing expense. Inasmuch as the resourceful manager watches both income and expense with equal care, both classes of cars should be of interest to him, but not necessarily a wise investment. Unfortunately the various local legislative bodies which govern the destinies of electric railways have generally seen fit to restrict to the carrying of passengers the services which the electric railways may perform, and consequently the possible instances are limited in which special equipment may be profitably acquired. On broad economic lines this is a mistake and rather the electric railways should be permitted in every possible way to render service to the general public. Fortunately there is a growing appreciation of the wisdom of such license and doubtless it will continue to grow, being cultivated largely by increased costs in every direction and by the resulting demands of the electric railways that every possible source of revenue be opened to them. We believe not only that city electric railways should be permitted to transport freight and express for themselves and others over their lines with certain restrictions, but that city electric railways should be employed for the transportation of mail wherever possible; that they should be given contracts covering street sprinkling and that generally as public service corporations their services should be employed whenever it is possible to do so with mutual profit.

RAILWAY AGE GAZETTE comments editorially in a recent number on the difficulties encountered by the young technical graduate whose thoughts at this time of year turn towards a job. After reiterating the well known fact that there is no escape from the severe competition in the lower strata for some years after gradtion, but that there is plenty of room at the top, attention is called to the large number of technical graduates which are annually absorbed by the railways and to the opportunity which railway work offers. The reference is doubtless to the steam railways, for

the number of technical graduates at present entering electric railway work is remarkably small. From the standpoint of absence of competition, the opportunity is accordingly greater and we are convinced that it is not the perspective that leads us to say that the opportunity in electric railway work is greater for other reasons. Our appreciation of the need for technical graduates in electric railway work and the equal realization of the need by the electric railway themselves, is evidenced in our annual Brill Thesis Prize offer of $500, which has the support of the American Street & Interurban Railway Association.

IT is the small consumer, the small dealer, the small electric railway that supposedly always has to pay the highest prices, take what the big man gives him and thank his stars if he manages to survive. That has been the theory for a good while past, is still the belief of a great many and is doubtless largely true. But there is an old theory which has recently been brought forward with prominence and which has been proven to be a fact. It is that the small consumer can and does control the situation provided he cooperates with his fellow small consumers. In electric railway work this is just as surely the case as in farming, merchandising or in any other business and there are more than a few isolated instances of a present tendency of electric railways to cooperate—the American Street & Interurban Railway Association is probably the most prominent. However, we refer more particularly to organized cooperation for actual operating purposes, such as for the purpose of obtaining expert engineering advice, standardization of equipment, wholesale purchases, etc. The Stone & Webster organization typifies organization of this sort among the larger electric railways and there are the Clark properties, the Interstate Railways and others, some of which, however, represent consolidation and excessive speculative capitalization of the future rather than cooperation. Cooperation which offers the best opportunity for the salvation of the small electric railways is yet in its infancy. It involves a community of interest by a number of roads of small track mileage in towns with a population of less than 50,000. Roads of this sort operate under conditions so nearly the same that standardization of equipment and consequently of purchases could be effected. A general superintendent of purchasers, a general superintendent of motive power, a chief engineer and an electrical engineer to have general supervision over the respective departments of all the railways should be chosen and each should be a man of large caliber. The salaries of these men could be made sufficiently large to attract broad-gauged men of the highest ability who would displace the

corresponding individual officials of the several cooperating roads and thus materially reduce the aggregate salary expense. In addition, men of this caliber would save their salaries annually by the application of economies in purchasing and operation, which are possible only through cooperation and organization. However, the salvation of the small road by this method is less probable than by the methods so frequently connected with high finance, but either the cooperation of the small roads or their consolidation for operating purposes is a foregone conclusion for economic reasons.

UNTIL the small electric railways by cooperation or consolidation are able to obtain the services of expert engineers and the advantage of wholesale purchases, their only course lies in the exercise of the most careful discretion and the use of the sources of advice which are open. Fortunately, the technical journals of the electric railway field offer a large fund of information about the work of the larger and better equipped roads which by interpretation and digestion form a guide of great value. The technical journals are also closely in touch with the smaller progressive roads and the accounts of their experience and work are undoubtedly invaluable to the officials of railways of approximately the same size. The general information to be obtained from publications is of wide extent. On special problems the proposition is different and we can not even attempt to suggest a general course of procedure. But on special problems connected with cars or trucks we believe we can be of service, for not only do we build more rolling stock than any other car builder, but there comes before us each year the car and truck problems of a majority of the electric railways of the country. We have an engineering department for the solution of these problems and the developments in car and truck construction, in which we are the admitted leaders, are the result of the satisfactory disposition of a number of similar problems and seldom the result of an isolated experience. It is sometimes said that we apply our extended experience for the benefit of the larger railways and that the smaller road must take what is given to him. The criticism is correct in that the larger roads receive the benefit first and rightly, for only thereby is it commercially possible for the smaller roads to receive the benefit. But it is unjust in that we strive to give as intelligent and careful service to the small roads as to the large and to adapt to the use of the small roads every improvement in rolling stock. An example of an economical adaption of the Pay-As-You-Enter idea for the use of small electric railways is found on another page of this issue in the description of the one-man Pay-As-You-Enter cars for Oklahoma.

THE J. G. BRILL COMPANY

Main Office
PHILADELPHIA, U. S. A.
Cable Address: "BRILL" Philadelphia.

London Office
110 CANNON STREET, E. C.
Cable Address: "AXLES," London.

AMERICAN CAR COMPANY
St. Louis, Mo.

G. C. KUHLMAN CAR COMPANY
Cleveland, Ohio

JOHN STEPHENSON COMPANY
Elizabeth, N. J.

WASON MANUFACTURING CO.
Springfield, Mass.

DANVILLE CAR COMPANY
Danville, Ill.

COMPAGNIE J. G. BRILL

14 Place de Laborde, Paris
Cable Address: "BOGIBRIL."

AGENCIES

Pacific Coast
PIERSON, ROEDING & CO.
409 Monadnock Building
San Francisco

Australasia
NOYES BROTHERS
Melbourne, Sidney, Dunedin
Brisbane, Perth

Mexico
INTERNATIONAL MACHY & ENG. CO.
Mutual Building, Mexico, D. F.

Belgium and Holland
C. DUBBELMAN
45 Rue de la Caserne
Brussels

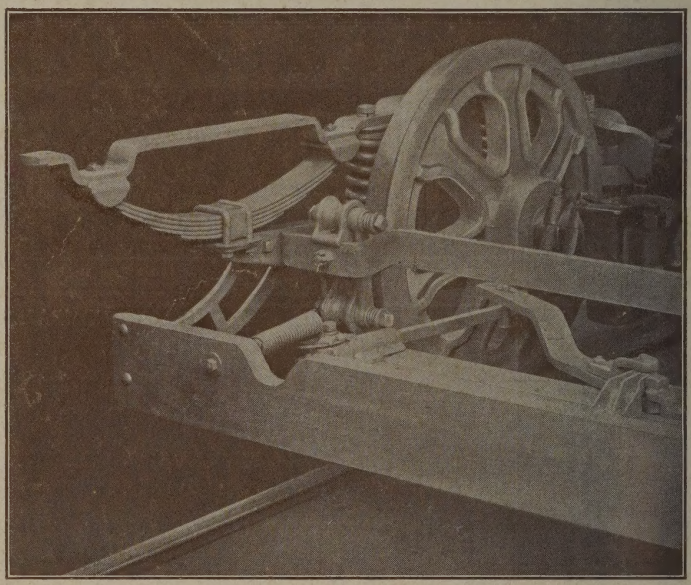
Argentine and Uruguay
FEDERICO H. BAGGE
121 San Martin
Buenos Aires

Natal, Transvaal and Orange River Colony
THOMAS BARLOW & SONS
Durban, Natal

Italy
GIOVANNI CHECCHETTI
Piazza Sicilia, 1
Milan

China
SHEWAN TOMES & CO.
Hong Kong, Canton
Shanghai

UNIVERSITY OF ILLINOIS-URBANA
3 0112 120139933



BRILL HALF-BALL BRAKE HANGER

(Patented)

The thoroughly practicability of the Brill Half-Ball Brake Hanger is indicated by its wide range of application. It is adaptable not only to any Brill truck from the No. 21-E Truck, shown above, to the No. 39-E Single Motor Truck with pony wheel, but also to the trucks of other manufacturers. Let us figure on your requirements.

THE J. G. BRILL COMPANY

PHILADELPHIA - - - PENNSYLVANIA